Managers, Workers, and Organizations

Chris Argyris

Organizations require people who have learned the skills that are necessary to do their job. But before people can use these skills effectively, the programs must be rigorously generalized and stored. Thus the workers not only make their skill-programs tacit, but once they do, they must make them rigid and not easily alterable. Otherwise they could not be performed without thinking. Only when errors are made or changes are required do the programs become explicit, but then their rigidity must also be dealt with in correcting the programs.

Incomplete Control, Complete Responsibility

Managers are faced with the task of monitoring employee performance guided by programs that are hidden from the actor, yet ruthlessly generalized and tenaciously defended. A worker who has learned to use a machine has learned a highly complex program of skills. Once he has learned these skills, he must adhere to them rigorously or he will make errors. He cannot deviate from the program without getting into trouble. Though he is held responsible for the workers' performance, the manager does not have direct access to the programs that produce the performance. If corrections are necessary, some employees will hold on to their programs and tenaciously resist these corrections. The manager is faced with the predicament of being held responsible for errors that he, and the workers, may have great difficulty in discovering and correcting them.

The uncertainty created by the nature of human information processing is cumulated and expanded because managers are also finite information-processing systems. They, too, make their programs tacit and hold on to them tightly. Even with the capacity to make programs explicit, there is a limit to how much information they can cope with. Hence the need arises to monitor managers.

Although managerial control is necessarily incomplete, managerial responsibility for theresults is not. Managers must find ways to reduce the probability of error. One method is to simplify jobs. If a tacit and rigid program has to surface in order to be corrected, it should be as uncomplicated and basic as possible.

The second strategy is to define production or work standards and the tolerances for errors allowable in achieving these standards. If performance errors exceed tolerances, corrective managerial action must be taken. This strategy is called management by exception. At its core is the creation of gaps of knowledge about employee performance coupled with a continual sampling for errors. The performance of employees is not monitored (hence gaps of knowledge) until error is observed (hence monitoring for error). Implicit in the effectiveness of management by exception is acceptance of the theory that managers need valid information only when workers deviate from standards. But since managers are finite and monitor the work of many human information processors, the data they obtain about the performance of their subordinates must be both comprehensive and manageable. The data must also be abstract. The unique aspects of each situation must be ignored because they would make the data too complex to be useful, especially to "doers".

We now have workers with programs that are tacit, rigorously generalized, and difficult to control directly, and managers who use information that is abstracted from the unique situation for which they are responsible (for example, the weekly or monthly budget and production figures). The managers create their own tacit programs and hold on to them tenaciously. These managers must, in turn, be managed, and the problems of tacitness, incompleteness, and the abstractness become replicated.

The managers who are most distant from the local level have the greatest responsibility for what happens at that level. In order to manage effectively, they, too, must design gaps in their knowledge while being held responsible for these very gaps. Hence the need to assure themselves that they can institute programs to

detect and correct error. One result is that power increases with distance from the local level.

Everyone acknowledges that the information used to manage organizations should be valid, timely, and user-friendly. In order for these conditions to exist, the information system designed must take into account the capacities and constraints of the human mind.

Rationality Produces Irrationality

Picture a hierarchical organization. At the lower levels of management are first-line supervisors. Next are second-line supervisors, and on up until we reach the top. For the sake of example, I will focus on the nature of the information required by any senior executives and by first-line supervisors. The senior executives are responsible for managing the total organization. The first-line supervisors manage a small group of employees. Let us call the information system used by the first-line supervisors a local one. It is local in the sense that it is close to the firing line, close to where the action is. Let us call the information systems used by the senior executives a distant one. It is distant in the sense that it is far away from where we can locate the firing line and the action.

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Each information system requires different types of information. First-line supervisors of small production groups usually deal with information that is concrete, unique to that group, subjective, implicitly logical, and therefore it is difficult to develop trends or to use for comparison with other groups. The first-line supervisors speak of Mary, Joe or Bill as the people who work for them. They often describe their subordinates in concrete, emotional, subjective terms. First-line supervisors often become angry with information systems that treat "my people" as categories or numbers. They often resist being compared to other groups because they see their respective groups as unique.

Senior executives are responsible for the total organization. It is not within the capabilities of the human mind to know all the information of hundreds if not thousands of groups. It is not possible for them to treat each group with its full uniqueness. In some instances, it would be wrong because treating one group more favorably than another is the basis for injustice. Senior executives, therefore, require information that is more abstract, objective, explicitly logical, and which is trendable and comparable.

The effectiveness of the senior or first-line supervisor is directly affected by how well each uses his respective information. Each develops a different set of skills for dealing with the type of information each must use. Their sense of competence and confidence in themselves becomes directly influenced by how well they use the different types of information. That means the senior executive's sense of competence and confidence will be associated with using distant information. The first-line supervisor's sense of competence and confidence will be associated with using local information.

The first-line supervisors may view the abstract, objective, distant information systems as unfair, unjust and inhumane. The senior executives may view requests to think locally as unfair, unjust, and inhumane. Tensions exist that could lead to embarrassment or threat. Once these are activated, we also activate the bypass and cover-up strategies described above. Once they are activated, we increase the likelihood that invalid or distorted information will be created or the timeliness of the information will be reduced. Either or both of these consequences lead to information that is hardly user-friendly.

And so we have a paradox. Information systems that were designed to produce valid, timely, and user-friendly information may well create conditionsunder whichthe systems, if used correctly, will produce the opposite intented, namely invalid, untimely, and "user-unfriendly" information.

Organizations as Limited Learning Systems

Error is any feature of knowledge or of knowing that makes inquiry for action ineffective. Error is a condition of mismatch. The first condition for learning is the detection and correction of error. The second condition for learning is match; that is, the ability to create conditions that match plans and expectations with effective action.

Organizations learn through individuals who act as agents for them. The individuals' learning activities, in turn, are facilitated or inhibited by an ecological system of factors that we have called an organizational learning system. When the learning system is only adequate enough to enable the organization to implement its existing policies and meet its stated objectives, the process at work is what Schon and I call single-loop – or Model I – learning. It is like the thermostat that receives information about the temperature of the

room and can turn the heat on or off if it too hot or too cold.

Double-loop – or Model II – learning, by contrast, performs the more difficult and comprehensive task of questioning underlying goals and assumptions. It is as if the thermostat were capable of asking itself whether it should be set at 68 degrees. In single-loop learning, for example, you might debate what could be done to improve the profit picture in a nonprofitable division that was considered the president's pet project and whose discontinuation is not discussable. In double-loop learning, you could confront the problem head-on and decide to discontinue the operation of the non-profitable division.

When any information gets processed by people using Model I theories-in-use, a primary inhibiting loop for learning is created, because the tendency of these people will be to reinforce whatever degree of inaccessibility, ambiguity, vagueness, and inconsistency already exists in the information . By inhibiting loop, I mean simply interactions that tend to maintain and reinforce the original conditions that produce error. Feedback is positive in that it reinforces the original qualities of the information; it is not corrective, feedback is represented by arrows that return to a previous condition.

What is a Model I theory-in-use? The behavior of people is determined by the theories of action they carry around in their heads. Espoused theories of action are the theories that people report as governing their actions. Theories-in-use are the theories that actually govern their actions. Most people studied so far manifest remarkably similar theories-in-use, no matter what theories they espouse. Therefore, these theories can be put in the form of a model, which we have identified as Model I.

Although managerial control is incomplete, managerial responsibility for results is not.

Model I theories-in-use are theories of top-down, unilateral control over others that enable individuals to win, not lose, and to be effective by controlling the environment in which they exist. But we can show that Model I theories-in-use lead to effective problem solving primarily for issues that do not require questioning of their underlying assumptions (single-loop learning). Model I theories-in-use do not make it possible for people to develop problem-solving skills that question the theories' governing values (double-loop learning).

People studied so far manifest similar theories-in-use, which are oriented toward unilateral control and lead to single-loop learning. There are four consequences, all unfortunate. People tend to be unaware of their impact on error discovery and correction. If A makes an error and others tend to hide the impact it has on them, A will be unaware of the impact. People tend to be unaware that they are unable to discover-invent-produce genuinely corrective solutions to problems. And there are defensive group dynamics, with little additional problem solving, low openness and trust, and high conformity and covering up of threatening issues. Counterproductive intergroup dynamics is another negative outcome.

These four results create secondary inhibiting loops, so called because they come out of interaction with the primary inhibiting loops. Secondary inhibiting loops also feed back to reinforce the primary inhibiting loops and the previous conditions that predispose to error.

A Question of Errors

What kind of errors tend to be correctable or uncorrectable under these conditions? Errors that tend to be correctable include those whose existence is known and available to the participants, whose discovery and correction are threatening but whose camouflage or noncorrection is more threatening.

Errors that tend not to be correctable include those whose discovery is a threat to the person's system of hiding error, those that reinforce primary inhibiting loops because they are threatening Model I values (windo not lose, suppress feelings, and so forth), and those whose correction violates organizational norms. They are camouflaged, the primary and secondary inhibiting loops associated with them are camoulaged, or the camouflage is camouflaged, with the development of such protective activities as "just in case the superiors ask" files. A norm usually associated with Model I theories of action is that "you cannot openly confront norms that tell you not to confront policies and objectives." In order to maintain the first norm a lot of information about error hiding would have to be camouflaged. We find norms within norms that prevent double-loop learning.

These tendencies toward camoflauge also increase the predisposition to competitive win-lose games, deception, and the avoidance of risks. They strengthen the tendency of participants to assert that their organizations are brittle and unchangeable, and increase their conviction that organizations are not designed for

double-loop learning. These conditions feed back to reinforce the previous error-producing conditions and simultaneously reduce the probability that the organization will examine rigorously the processes by which it examines and evaluates its performance.

And the cycle of reinforcement begins again. Every time the previous conditions are reinforced, the consequences are also reinforced. Hence, we have a system in which no one is very likely to learn except when dealing with problems that are correctable. The participants will tend to experience double binds. If they go by the system, they will learn very little about issues that question the underlying objectives and policies. If they think at all about changing the system, they will tend to consider it a task that is both foolhardy and a threat to their survival.

None of these generalizations is limited to any political-economic system in particular. They should all hold true in virtually any type of economy, at least in any economy that meets the following conditions: people (with finite information-processing capacities) are used as agents of the organization, information is used to manage the organization, and the people hold Model I theories-in-use.

READINGS SUGGESTED BY THE AUTHOR

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Chris Argyris is James Bryant Conan Professor in the Graduate Schools of Business Administration and Education at Harvard University. He is author of numerous books and articles. His most recent book is Integrating the Individual and the Organization, *published by Transaction.*